

THE DE CONTENT OF HULL-LESS BARLEY

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The DE content of clean hull-less barley is comparable to wheat.

Summary

Hull-less barley is used as a source of energy and amino acids in swine rations in Western Canada but is characterized poorly in terms of DE content. Our objective was to determine the DE content of cleaned hull-less barley in relation to barley, wheat, and triticale. Chemical characteristics were analyzed to enable subsequent calculation of prediction equations

The DE content of cleaned hull-less barley was equal to that of wheat. We were able to predict the DE content of hull-less barley accurately by using starch, neutral-detergent insoluble nitrogen (NDIN) and neutral-detergent fiber (NDF) analyses.

Introduction

Hull-less barley is an increasingly important energy and amino acid source for grower-finisher pigs in Western Canada, but its nutritional value has been characterized poorly. The DE content has been determined in samples that were not cleaned properly or in samples of which hull content in the sample was not reported.

For this study, five varieties of hull-less barley were grown on two separate experimental fields in Saskatchewan. The objective was to relate DE content of hull-less barley to other cereal grains and with chemical characteristics to enable subsequent calculation of prediction equations.

Experimental Procedures

As a component of a collaborative project with the Prairie Feed Resource Centre, hull-less barley was cleaned and analyzed for crude protein (CP), acid-detergent fiber (ADF), NDF, ash, ether extract (EE), NDIN, starch, and DE content. Regression analysis was used to develop relations between DE content and chemical composition.

Results and Discussion

The DE content of cleaned hull-less barley was equal to that of wheat (Figure 1). The difference between the DE

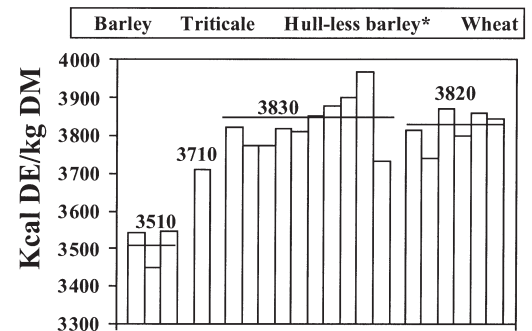
content of hull-less barley and barley was around 400 kcal/kg on a DM basis, suggesting that for each 25 per cent additional hulls in the sample the DE content of hull-less barley might be reduced by 100 kcal DE/kg DM. Using starch, NDIN, and NDF (all three on DM-basis), an accurate ($R^2 = 0.88$) prediction equation could be developed: $DE \text{ (kcal/kg DM)} = 2231 + 22 \times \text{per cent starch} + 636 \times \text{per cent NDIN} - 42 \times \text{per cent NDF}$. Equations using CP with ADF, NDF, CF, or EE did not result in accurate predictions of DE content.

Implications

Results indicate that the DE content of cleaned hull-less barley is equal to that of wheat. This also means that uncleaned hull-less barley will have a lesser value than wheat and that the amount of hulls remaining in the sample should be taken into consideration on a weight basis for diet formulation or price paid. The DE content of hull-less barley could be predicted accurately; however, the prediction will be expensive to perform.

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* Hull-less barley was cleaned to contain 0% hulls

Figure 1. The DE content of cleaned hull-less barley in contrast to wheat, barley, and triticale.

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